

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 415-576-0200.

Respectfully submitted,


Annette S. Parent
Reg. No. 42,058

TOWNSEND and TOWNSEND and CREW LLP
Two Embarcadero Center, 8th Floor
San Francisco, California 94111-3834
Tel: (415) 576-0200
Fax: (415) 576-0300
ASP
SF 1241989 v1

APPENDIX A

VERSION WITH MARKINGS TO SHOW CHANGES MADE

6. (once amended) A [pharmaceutical] composition comprising a MTB39 antigen, having an amino acid sequence of SEQ ID NO:91 or 107, or an immunogenic fragment thereof from a *Mycobacterium* species of the tuberculosis complex, and a MTB32A antigen, having an amino acid sequence of SEQ ID NO:79, or an immunogenic fragment thereof from a *Mycobacterium* species of the tuberculosis complex.

7. (once amended) The composition of claim 6, comprising a MTB39 antigen, having an amino acid sequence of SEQ ID NO:91 or 107, or an immunogenic fragment thereof from a *Mycobacterium* species of the tuberculosis complex, and a polypeptide comprising at least 205 amino acids of the N-terminus of a MTB32A antigen (SEQ ID NO:79) from a *Mycobacterium* species of the tuberculosis complex.

8. (once amended) The composition of claim 7, further comprising a polypeptide comprising at least about 132 amino acids from the C-terminus of MTB32A antigen (SEQ ID NO:79) from a *Mycobacterium* species of the tuberculosis complex.

9. (as filed) The composition of claims 6, 7, or 8, wherein the antigens are covalently linked, thereby forming a fusion polypeptide.

10. (once amended) The composition of claim 9, wherein the fusion polypeptide has the amino acid sequence of MTB59F (SEQ ID NO:24).

11. (once amended) The composition of claim 9, wherein the fusion polypeptide is encoded by a polynucleotide that hybridizes under stringent hybridization conditions to a polynucleotide comprising [has] the [amino acid] nucleotide sequence of MTB72F (SEQ ID NO:1).

12. (as filed) The composition of claim 9, wherein the antigens are covalently linked via a chemical linker.

13. (as filed) The composition of claim 12, wherein the chemical linker is an amino acid linker.

14. (once amended) The composition of claim 6, further comprising at least one additional antigen from a *Mycobacterium* species of the tuberculosis complex, wherein the antigen is selected from the group consisting of MTB8.4 antigen (SEQ ID NO:102), MTB9.8 antigen (SEQ ID NO:109), MTB9.9 antigen (SEQ ID NO:29), MTB40 antigen (SEQ ID NO:138), MTB41 antigen (SEQ ID NO:142), ESAT-6 antigen (SEQ ID NO:104), MTB85 complex antigen, or α -crystalline antigen, or an immunogenic fragment thereof.

15. (as filed) The composition of claim 6, further comprising an adjuvant.

16. (as filed) The composition of claim 15, wherein the adjuvant comprises QS21 and MPL.

17. (as filed) The composition of claim 15, wherein the adjuvant is selected from the group consisting of AS2, ENHANZYN, MPL, QS21, CWS, TDM, AGP, CPG, Leif, saponin, and saponin mimetics.

18. (as filed) The composition of claim 6, further comprising BCG.

19. (as filed) The composition of claim 6, further comprising an NS1 antigen or an immunogenic fragment thereof from a *Mycobacterium* species of the tuberculosis complex.

20. (as filed) The composition of claim 6, wherein the *Mycobacterium* species is *Mycobacterium tuberculosis*.

55. (new) The composition of claim 6, further comprising at least one additional antigen from a *Mycobacterium* species of the tuberculosis complex, wherein the antigen is selected from the group consisting of MTB8.4 antigen (SEQ ID NO:102), MTB9.8 antigen (SEQ ID NO:109), MTB9.9 antigen (SEQ ID NO:29), MTB40 antigen (SEQ ID NO:138), MTB41 antigen (SEQ ID NO:142), ESAT-6 antigen (SEQ ID NO:104), MTB85 complex antigen, or α -crystalline antigen, or an immunogenic fragment thereof.

56. (new) The composition of claim 6, further comprising an adjuvant.

57. (new) The composition of claim 56, wherein the adjuvant comprises QS21 and MPL.

58. (new) The composition of claim 56, wherein the adjuvant is selected from the group consisting of AS2, ENHANZYN, MPL, QS21, CWS, TDM, AGP, CPG, Leif, saponin, and saponin mimetics.

59. (new) The composition of claim 6, further comprising BCG.

60. (new) The composition of claim 6, further comprising an NS1 antigen or an immunogenic fragment thereof from a *Mycobacterium* species of the tuberculosis complex.

61. (new) The composition of claim 55, wherein the *Mycobacterium* species is *Mycobacterium tuberculosis*.

62. (new) The composition of claim 6, wherein the fusion polypeptide has the amino acid sequence of MTB72F (SEQ ID NO:2).

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PATENT
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Assistant Commissioner for Patents
Washington, D.C. 20231

On July 2, 2001

TOWNSEND and TOWNSEND and CREW LLP

By: Joy M. Marshall

*Marked
version -
for Examiner's
convenience*

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Yasir Skeiky, Steven Reed, and
Mark Alderson

Application No.: 09/597,796

Filed: June 20, 2000

For: FUSION PROTEINS OF
MYCOBACTERIUM TUBERCULOSIS

Examiner: Rodney Swartz

Art Unit: 1645

**RESPONSE TO RESTRICTION
REQUIREMENT AND PRELIMINARY
AMENDMENT**

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

In response to the Restriction Requirement mailed May 31, 2001, please elect the following invention and amend the above-identified application as follows:

IN THE CLAIMS:

Please amend claims 1, 2, 3, 5, 6, and 9 as follows.

Please add new claims 55-62 as follows.

Please cancel claims 16-54 without prejudice to subsequent revival.

Appendix A provides the "Version with Markings to Show Changes Made." All pending claims are provided in Appendix B for the Examiner's convenience.

1. (once amended) A composition comprising a MTB39 antigen, having an amino acid sequence of SEQ ID NO:91 or 107, or an immunogenic fragment thereof from a *Mycobacterium* species of the tuberculosis complex, and a MTB32A antigen, having an amino acid sequence of SEQ ID NO:79, or an immunogenic fragment thereof from a *Mycobacterium* species of the tuberculosis complex.

2. (once amended) The composition of claim 1, comprising a MTB39 antigen, having an amino acid sequence of SEQ ID NO:91 or 107, or an immunogenic fragment thereof from a *Mycobacterium* species of the tuberculosis complex, and a polypeptide comprising at least 205 amino acids of the N-terminus of a MTB32A antigen (SEQ ID NO:79) from a *Mycobacterium* species of the tuberculosis complex.

3. (once amended) The composition of claim 2, further comprising a polypeptide comprising at least about 132 amino acids from the C-terminus of MTB32A antigen (SEQ ID NO:79) from a *Mycobacterium* species of the tuberculosis complex.
5. (once amended) The composition of claim 4, wherein the fusion polypeptide has the amino acid sequence of MTB59F (SEQ ID NO:24).

6A. (once amended) The composition of claim 4, wherein the fusion polypeptide is encoded by a polynucleotide that hybridizes under stringent hybridization conditions to a polynucleotide comprising the nucleotide sequence of MTB72F (SEQ ID NO:1).

9B. (once amended) The composition of claim 1, further comprising at least one additional antigen from a *Mycobacterium* species of the tuberculosis complex, wherein the antigen is selected from the group consisting of MTB8.4 antigen (SEQ ID NO:102), MTB9.8 antigen (SEQ ID NO:109), MTB9.9 antigen (SEQ ID NO:29), MTB40 antigen (SEQ ID NO:138), MTB41 antigen (SEQ ID NO:142), ESAT-6 antigen (SEQ ID NO:104), MTB85 complex antigen, or α -crystalline antigen, or an immunogenic fragment thereof.

55. (new) The composition of claim ~~1~~¹, further comprising at least one additional antigen from a *Mycobacterium* species of the tuberculosis complex, wherein the antigen is selected from the group consisting of MTB8.4 antigen (SEQ ID NO:102), MTB9.8 antigen (SEQ ID NO:109), MTB9.9 antigen (SEQ ID NO:29), MTB40 antigen (SEQ ID NO:138), MTB41 antigen

(SEQ ID NO:142), ESAT-6 antigen (SEQ ID NO:104), MTB85 complex antigen, or α -crystalline antigen, or an immunogenic fragment thereof.

56. (new) The composition of claim 6, further comprising an adjuvant.

57. (new) The composition of claim 56, wherein the adjuvant comprises QS21 and MPL.

58. (new) The composition of claim 56, wherein the adjuvant is selected from the group consisting of AS2, ENHANZYN, MPL, QS21, CWS, TDM, AGP, CPG, Leif, saponin, and saponin mimetics.

59. (new) The composition of claim 6, further comprising BCG.

60. (new) The composition of claim 6, further comprising an NS1 antigen or an immunogenic fragment thereof from a *Mycobacterium* species of the tuberculosis complex.

61. (new) The composition of claim 55, wherein the *Mycobacterium* species is *Mycobacterium tuberculosis*.

62. (new) The composition of claim 6, wherein the fusion polypeptide has the amino acid sequence of MTB72F (SEQ ID NO:2).

REMARKS

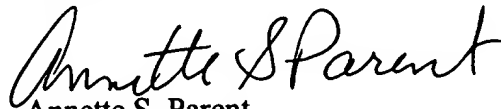
In response to the Restriction Requirement dated May 21, 2001, Applicants elect to prosecute Group I, claims 1-15, drawn to protein compositions. The foregoing election is made with traverse, as the five groups set forth by the Examiner all stem from a common concept and theory, and are thus related. As such, prosecution of the claims of Groups I-IV would not place a substantially greater burden on the Examiner. Applicants therefore respectfully request that the Examiner withdraw the Restriction Requirement and consider all the claims together.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

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Annette S. Parent
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APPENDIX A

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~~1.6.~~ (once amended) A [pharmaceutical] composition comprising a MTB39 antigen, having an amino acid sequence of SEQ ID NO:91 or 107, or an immunogenic fragment thereof from a *Mycobacterium* species of the tuberculosis complex, and a MTB32A antigen, having an amino acid sequence of SEQ ID NO:79, or an immunogenic fragment thereof from a *Mycobacterium* species of the tuberculosis complex.

~~2.7.~~ (once amended) The composition of claim ~~6.~~¹, comprising a MTB39 antigen, having an amino acid sequence of SEQ ID NO:91 or 107, or an immunogenic fragment thereof from a *Mycobacterium* species of the tuberculosis complex, and a polypeptide comprising at least 205 amino acids of the N-terminus of a MTB32A antigen (SEQ ID NO:79) from a *Mycobacterium* species of the tuberculosis complex.

~~3.8.~~ (once amended) The composition of claim ~~7.~~², further comprising a polypeptide comprising at least about 132 amino acids from the C-terminus of MTB32A antigen (SEQ ID NO:79) from a *Mycobacterium* species of the tuberculosis complex.

~~4.9.~~ (as filed) The composition of claims ~~6.~~¹, ~~7.~~², or ~~8.~~³, wherein the antigens are covalently linked, thereby forming a fusion polypeptide.

~~5.10.~~ (once amended) The composition of claim ~~9.~~⁴, wherein the fusion polypeptide has the amino acid sequence of MTB59F (SEQ ID NO:24).

~~6.11.~~ (once amended) The composition of claim ~~9.~~⁴, wherein the fusion polypeptide is encoded by a polynucleotide that hybridizes under stringent hybridization conditions to a polynucleotide comprising [has] the [amino acid] nucleotide sequence of MTB72F (SEQ ID NO:1).

~~7.12.~~ (as filed) The composition of claim ~~9.~~⁴, wherein the antigens are covalently linked via a chemical linker.

~~8.13.~~ (as filed) The composition of claim ~~12.~~⁷, wherein the chemical linker is an amino acid linker.

9.14. (once amended) The composition of claim ~~6~~¹, further comprising at least one additional antigen from a *Mycobacterium* species of the tuberculosis complex, wherein the antigen is selected from the group consisting of MTB8.4 antigen (SEQ ID NO:102), MTB9.8 antigen (SEQ ID NO:109), MTB9.9 antigen (SEQ ID NO:29), MTB40 antigen (SEQ ID NO:138), MTB41 antigen (SEQ ID NO:142), ESAT-6 antigen (SEQ ID NO:104), MTB85 complex antigen, or α -crystalline antigen, or an immunogenic fragment thereof.

10.15. (as filed) The composition of claim ~~6~~¹, further comprising an adjuvant.

11.16. (as filed) The composition of claim ~~15~~¹⁰, wherein the adjuvant comprises QS21 and MPL.

12.17. (as filed) The composition of claim ~~15~~¹⁰, wherein the adjuvant is selected from the group consisting of AS2, ENHANZYN, MPL, QS21, CWS, TDM, AGP, CPG, Leif, saponin, and saponin mimetics.

13.18. (as filed) The composition of claim ~~6~~¹, further comprising BCG.

14.19. (as filed) The composition of claim ~~6~~¹, further comprising an NS1 antigen or an immunogenic fragment thereof from a *Mycobacterium* species of the tuberculosis complex.

15.20. (as filed) The composition of claim ~~6~~¹, wherein the *Mycobacterium* species is *Mycobacterium tuberculosis*.

55. (new) The composition of claim ~~6~~¹, further comprising at least one additional antigen from a *Mycobacterium* species of the tuberculosis complex, wherein the antigen is selected from the group consisting of MTB8.4 antigen (SEQ ID NO:102), MTB9.8 antigen (SEQ ID NO:109), MTB9.9 antigen (SEQ ID NO:29), MTB40 antigen (SEQ ID NO:138), MTB41 antigen (SEQ ID NO:142), ESAT-6 antigen (SEQ ID NO:104), MTB85 complex antigen, or α -crystalline antigen, or an immunogenic fragment thereof.

56. (new) The composition of claim 6, further comprising an adjuvant.

57. (new) The composition of claim 56, wherein the adjuvant comprises QS21 and MPL.

58. (new) The composition of claim 56, wherein the adjuvant is selected from the group consisting of AS2, ENHANZYN, MPL, QS21, CWS, TDM, AGP, CPG, Leif, saponin, and saponin mimetics.

59. (new) The composition of claim 6, further comprising BCG.

60. (new) The composition of claim 6, further comprising an NS1 antigen or an immunogenic fragment thereof from a *Mycobacterium* species of the tuberculosis complex.

61. (new) The composition of claim 55, wherein the *Mycobacterium* species is *Mycobacterium tuberculosis*.

62. (new) The composition of claim 6, wherein the fusion polypeptide has the amino acid sequence of MTB72F (SEQ ID NO:2).

APPENDIX B
PENDING CLAIMS

~~1~~ ²¹ (once amended) A composition comprising a MTB39 antigen, having an amino acid sequence of SEQ ID NO:91 or 107, or an immunogenic fragment thereof from a *Mycobacterium* species of the tuberculosis complex, and a MTB32A antigen, having an amino acid sequence of SEQ ID NO:79, or an immunogenic fragment thereof from a *Mycobacterium* species of the tuberculosis complex.

~~2~~ ²² (once amended) The composition of claim ~~1~~ ¹, comprising a MTB39 antigen, having an amino acid sequence of SEQ ID NO:91 or 107, or an immunogenic fragment thereof from a *Mycobacterium* species of the tuberculosis complex, and a polypeptide comprising at least 205 amino acids of the N-terminus of a MTB32A antigen (SEQ ID NO:79) from a *Mycobacterium* species of the tuberculosis complex.

~~3~~ ²³ (once amended) The composition of claim ~~2~~ ², further comprising a polypeptide comprising at least about 132 amino acids from the C-terminus of MTB32A antigen (SEQ ID NO:79) from a *Mycobacterium* species of the tuberculosis complex.

~~4~~ ²⁴ (as filed) The composition of claims ~~1~~ ¹, ~~2~~ ², or ~~3~~ ³, wherein the antigens are covalently linked, thereby forming a fusion polypeptide.

~~5~~ ²⁵ (once amended) The composition of claim ~~4~~ ⁴, wherein the fusion polypeptide has the amino acid sequence of MTB59F (SEQ ID NO:24).

~~6~~ ²⁶ (once amended) The composition of claim ~~5~~ ⁴, wherein the fusion polypeptide is encoded by a polynucleotide that hybridizes under stringent hybridization conditions to a polynucleotide comprising the nucleotide sequence of MTB72F (SEQ ID NO:1).

~~7~~ ²⁷ (as filed) The composition of claim ~~6~~ ⁴, wherein the antigens are covalently linked via a chemical linker.

~~8~~ ²⁸ (as filed) The composition of claim ~~7~~ ⁷, wherein the chemical linker is an amino acid linker.

9.29. (once amended) The composition of claim ¹6, further comprising at least one additional antigen from a *Mycobacterium* species of the tuberculosis complex, wherein the antigen is selected from the group consisting of MTB8.4 antigen (SEQ ID NO:102), MTB9.8 antigen (SEQ ID NO:109), MTB9.9 antigen (SEQ ID NO:29), MTB40 antigen (SEQ ID NO:138), MTB41 antigen (SEQ ID NO:142), ESAT-6 antigen (SEQ IDNO:104), MTB85 complex antigen, or α -crystalline antigen, or an immunogenic fragment thereof.

10.30. (as filed) The composition of claim ¹⁰15, further comprising an adjuvant.

11.31. (as filed) The composition of claim ¹⁰15, wherein the adjuvant comprises QS21 and MPL.

12.32. (as filed) The composition of claim ¹⁰15, wherein the adjuvant is selected from the group consisting of AS2, ENHANZYN, MPL, QS21, CWS, TDM, AGP, CPG, Leif, saponin, and saponin mimetics.

13.33. (as filed) The composition of claim ¹6, further comprising BCG.

14.34. (as filed) The composition of claim ¹6, further comprising an NS1 antigen or an immunogenic fragment thereof from a *Mycobacterium* species of the tuberculosis complex.

15.35. (as filed) The composition of claim ¹6, wherein the *Mycobacterium* species is *Mycobacterium tuberculosis*.

55. (new) The composition of claim ¹6, further comprising at least one additional antigen from a *Mycobacterium* species of the tuberculosis complex, wherein the antigen is selected from the group consisting of MTB8.4 antigen (SEQ ID NO:102), MTB9.8 antigen (SEQ ID NO:109), MTB9.9 antigen (SEQ ID NO:29), MTB40 antigen (SEQ ID NO:138), MTB41 antigen (SEQ ID NO:142), ESAT-6 antigen (SEQ IDNO:104), MTB85 complex antigen, or α -crystalline antigen, or an immunogenic fragment thereof.

56. (new) The composition of claim 6, further comprising an adjuvant.

57. (new) The composition of claim 56, wherein the adjuvant comprises QS21 and MPL.

58. (new) The composition of claim 56, wherein the adjuvant is selected from the group consisting of AS2, ENHANZYN, MPL, QS21, CWS, TDM, AGP, CPG, Leif, saponin, and saponin mimetics.

59. (new) The composition of claim 6, further comprising BCG.

60. (new) The composition of claim 6, further comprising an NS1 antigen or an immunogenic fragment thereof from a *Mycobacterium* species of the tuberculosis complex.

61. (new) The composition of claim 55, wherein the *Mycobacterium* species is *Mycobacterium tuberculosis*.

62. (new) The composition of claim 6, wherein the fusion polypeptide has the amino acid sequence of MTB72F (SEQ ID NO:2).